IN THE CLAIMS:

1. – 24. (Cancelled)

25. (Currently Amended) A method for estimating data transmission rate in a communication system with variable data transmission rtes wherein a transmission signal includes a plurality of data symbols over a sequence of data frames, comprising:

classifying a data frame of a received transmission signal in accordance with a predefined classification of the data transmission rates; and

estimating the data transmission rate of the received data frame on basis of said classification;

wherein the data frames are classified based on a power spectral density function estimate of the received transmission signal; and

wherein the estimation of the power spectral density function comprises the steps of:

dividing the total number of received data symbols into blocks, wherein each block includes a predefined amount of consecutive points of the signal;

calculating an individual Fourier Transform for each of said blocks for receiving squared real and imaginary points for each frequency of the signal;

calculating an individual power spectral function estimate of each of the blocks by summing the squared real and imaginary points; and

calculating the power spectral density function estimate by averaging the individual power spectral function estimates.

26. (Previously Presented) A method for channel estimation in a cellular code division multiple access communication system wherein a plurality of data symbols is spread over a sequence of data frames in a transmission signal with variable data transmission rates, comprising:

classifying a data frame of a received transmission signal in accordance with a predefined classification of the data transmission rates; and

estimating the data transmission rate of the received data frame on basis of said classification;

wherein the data frames are classified based on a power spectral density function estimate of the received transmission signal; and

wherein the estimation of the power spectral density function comprises the steps of:

dividing the total number of received data symbols into blocks, wherein each block includes a predefined amount of consecutive points of the signal;

calculating an individual Fourier Transform for each of said blocks for receiving squared real and imaginary points for each frequency of the signal;

calculating an individual power spectral function estimate of each of the blocks by summing the squared real and imaginary points; and

calculating the power spectral density function estimate by averaging the individual power spectral function estimates.

27. (Previously Presented) Signal receiving circuitry for use in a communication system with variable data transmission rates wherein data is transmitted as a plurality of data symbols over s sequence of data frames, the signal receiving circuitry comprising a rate estimation unit for receiving an incoming transmission signal, for classifying a data frame of the signal in accordance with a predefined classification of the data transmission rates, and for determining from the results of the classification an estimate of the data transmission rate of the received data frame;

wherein the rate estimation unit is arranged to classify the received signal based on a power spectral density function estimate of the received transmission signal; and

wherein the rate estimation unit is arranged to estimate the power spectral density function by

dividing the total number of received data symbols into blocks, wherein each block includes a predefined amount of consecutive points of the signal;

calculating an individual Fourier Transform for each of said blocks for receiving squared real and imaginary points for each frequency of the signal;

calculating an individual power spectral function estimate of each of the blocks by summing the squared real and imaginary points; and

calculating the power spectral density function estimate by averaging the individual power spectral function estimates.

28. (Previously Presented) A mobile station including signal receiving circuitry arranged for use in communication via a communication system with variable data transmission rates wherein data is transmitted as a plurality of data symbols over a sequence of data frames, the signal receiving circuitry comprising a rate estimation unit for receiving an incoming transmission signal, for classifying a data frame of the signal in accordance with a predefined classification of the data transmission rates, and for determining from the results of the classification an estimate of the data transmission rate of the received data frame,

wherein the rate estimation unit is arranged to classify the received signal based on a power spectral density function estimate of the received transmission signal; and

wherein the rate estimation unit is arranged to estimate the power spectral density function by

dividing the total number of received data symbols into blocks, wherein each block includes a predefined amount of consecutive points of the signal;

calculating an individual Fourier Transform for each of said blocks for receiving squared real and imaginary points for each frequency of the signal;

calculating an individual power spectral function estimate of each of the blocks by summing the squared real and imaginary points; and

calculating the power spectral density function estimate by averaging the individual power spectral function estimates.

29. (Previously Presented) A base station including signal receiving circuitry for use in communication with variable data transmission rates wherein data is transmitted as a plurality of data symbols over a sequence of data frames, the signal receiving circuitry comprising a rate estimation unit for receiving an incoming transmission signal, for classifying a data frame of the signal in accordance with a predefined classification of the data transmission rates, and for determining from the results of the classification an estimate of the data transmission rate of the received data frame,

wherein the rate estimation unit is arranged to classify the received signal based on a power spectral density function estimate of the received transmission signal; and

wherein the rate estimation unit is arranged to estimate the power spectral density function by

dividing the total number of received data symbols into blocks, wherein each block includes a predefined amount of consecutive points of the signal;

calculating an individual Fourier Transform for each of said blocks for receiving squared real and imaginary points for each frequency of the signal;

calculating an individual power spectral function estimate of each of the blocks by summing the squared real and imaginary points; and

calculating the power spectral density function estimate by averaging the individual power spectral function estimates.

30. (Previously Presented) A method for estimating data transmission rate in a communication system with variable data transmission rtes wherein a transmission signal includes a plurality of data symbols over a sequence of data frames, comprising:

classifying a data frame of a received transmission signal in accordance with a predefined classification of the data transmission rates; and

estimating the data transmission rate of the received data frame on basis of said classification;

wherein the data frames are classified based on a power spectral density function estimate of the received transmission signal; and

wherein the classification comprises further:

calculating a variable from the power spectral density function for characterising the frequency content of the power spectral density function; and

comparing the variable against limit values of a classification decision structure, wherein the variable characterising the frequency content of the received transmission signal comprises center-of-moment of the power spectral density function.

31. (Previously Presented) A method for channel estimation in a cellular code division multiple access communication system wherein a plurality of data symbols is spread over a sequence of data frames in a transmission signal with variable data transmission rates, comprising:

classifying a data frame of a received transmission signal in accordance with a predefined classification of the data transmission rates; and

estimating the data transmission rate of the received data frame on basis of said classification;

wherein the data frames are classified based on a power spectral density function estimate of the received transmission signal; and

wherein the classification comprises further:

calculating a variable from the power spectral density function for characterising the frequency content of the power spectral density function; and

comparing the variable against limit values of a classification decision structure, wherein the variable characterising the frequency content of the received transmission signal comprises center-of-moment of the power spectral density function.

32. (Previously Presented) Signal receiving circuitry for use in a communication system with variable data transmission rates wherein data is transmitted as a plurality of data symbols over s sequence of data frames, the signal receiving circuitry comprising a rate estimation unit for receiving an incoming transmission signal, for classifying a data frame of the signal in accordance with a predefined classification of the data transmission rates, and for determining from the results of the classification an estimate of the data transmission rate of the received data frame;

wherein the rate estimation unit is arranged to classify the received signal based on a power spectral density function estimate of the received transmission signal; and

wherein the classification comprises further:

calculating a variable from the power spectral density function for characterising the frequency content of the power spectral density function; and

comparing the variable against limit values of a classification decision structure, wherein the variable characterising the frequency content of the received

transmission signal comprises center-of-moment of the power spectral density function.

33. (Previously Presented) A mobile station including signal receiving circuitry arranged for use in communication via a communication system with variable data transmission rates wherein data is transmitted as a plurality of data symbols over a sequence of data frames, the signal receiving circuitry comprising a rate estimation unit for receiving an incoming transmission signal, for classifying a data frame of the signal in accordance with a predefined classification of the data transmission rates, and for determining from the results of the classification an estimate of the data transmission rate of the received data frame;

wherein the rate estimation unit is arranged to classify the received signal based on a power spectral density function estimate of the received transmission signal; and

wherein the classification comprises further:

calculating a variable from the power spectral density function for characterising the frequency content of the power spectral density function; and

comparing the variable against limit values of a classification decision structure, wherein the variable characterising the frequency content of the received transmission signal comprises center-of-moment of the power spectral density function.

34. (Previously Presented) A base station including signal receiving circuitry for use in communication with variable data transmission rates wherein data is transmitted as a plurality of data symbols over a sequence of data frames, the signal receiving circuitry comprising a rate estimation unit for receiving an incoming transmission signal, for classifying a data frame of the signal in accordance with a predefined classification of the data transmission rates, and for determining from the results of the classification an estimate of the data transmission rate of the received data frame;

wherein the rate estimation unit is arranged to classify the received signal based on a power spectral density function estimate of the received transmission signal; and

wherein the classification comprises further:

calculating a variable from the power spectral density function for characterising the frequency content of the power spectral density function; and

comparing the variable against limit values of a classification decision structure, wherein the variable characterising the frequency content of the received transmission signal comprises center-of-moment of the power spectral density function.